DOCUMENT RESUME

ED 217 658 EC 142 743

AUTHOR Meyen, Edward L.; And Others
TITLE A Model for Conducting Research with Learning Disabled Adolescents and Young Adults.
INSTITUTION Kansas Univ., Lawrence, Inst. for Research in Learning Disabilities.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
REPORT NO IRLD-Mono-3
PUB DATE Jan 80
CONTRACT 300-77-0494
NOTE 26p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adolescents; *Educational Research; *Learning Disabilities; Literature Reviews; *Models; *Research Design; Young Adults
IDENTIFIERS *Process Research

ABSTRACT

Issues from the field of learning disabilities and the field of education in general which impact the learning disabled (LD) are discussed as they relate to research with LD adolescents and young adults. Based on the knowledge of the context in which the LD adolescent is required to function, a process research model that allows a commitment to programmatic research leading to the validation of interventions as well as the generation and investigation of new research questions is presented. Critical questions within the three research areas of the Institute for Research in Learning Disabilities - epidemiology, intervention, and generalization - are discussed as they relate to the research model. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED217658

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

INSTITUTE FOR RESEARCH IN LEARNING DISABILITIES
The University of Kansas
Lawrence, Kansas, 66045
Emphasis on Adolescents and Young Adults

A MODEL FOR CONDUCTING RESEARCH WITH LEARNING DISABLED ADOLESCENTS AND YOUNG ADULTS

Edward L. Meyen, Richard L. Schiefelbusch
Donald D. Deshler, Gordon R. Alley,
Jean B. Schumaker, and Frances L. Clark

Monograph #3

January, 1980

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Edward L. Meyen
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EC142743

The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U.S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.).

Co-Directors: Edward L. Meyen
Richard L. Schiefelbusch

Research Coordinator: Donald D. Deshler

Associate Coordinator: Jean B. Schumaker

Institute for Research in Learning Disabilities
The University of Kansas
313 Carruth-O'Leary Hall
Lawrence, KS 66045

The preparation of this document was supported by a government contract. The views expressed here are those of the Institute, and do not necessarily reflect official positions of the Bureau of Education for the Handicapped, DHEW, USOE.

ABSTRACT

Issues from the field of learning disabilities and the field of education in general which impact the learning disabled individual are discussed as they relate to research with learning disabled adolescents and young adults. Based on this knowledge of the context in which the LD adolescent is required to function, a research model that allows a commitment to programmatic research leading to the validation of interventions as well as the generation and investigation of new research questions is presented. Critical questions within the three research areas of the Institute -- epidemiology, intervention, and generalization -- are discussed as they relate to this research model.

A MODEL FOR CONDUCTING RESEARCH WITH LEARNING DISABLED ADOLESCENTS AND YOUNG ADULTS

Learning disabilities is a discipline which at this time is focusing on a number of researchable problems that must be addressed through programmatic research procedures. As Cruickshank (1977) pointed out, the field of learning disabilities "possesses an inadequate research base" (p. 58). It is also widely misunderstood among researchers in related fields as synonymous with "educational remediation in general" (p. 59). In addition, he stated, "there are absolutely no adequate data of either an epidemiological or demographic nature to provide a base for adequate programming" (p. 61). The absence of such data "continues the basis for confusion in state and federal legislative houses" (p. 61). Without agreeing with each point of his indictment, many professional persons working in the field might agree with Cruickshank's opinion that "the status of learning disabilities in the public schools of this nation is one of educational catastrophe" (p. 64). Cruickshank's strongly worded summary of his view of the field of learning disabilities suggests several practical issues for research.

First, researchers who would employ learning disabled students as subjects are forced to select from among a variety of definitions used by state departments of education, few of which include specific operational criteria. In a field that has enjoyed a decade of remarkable development in terms of teacher training and provision of a continuum of public school programs, it is not expected that the fundamental issue of definition should remain. Yet the continuing search for explicit criteria in a useful and commonly accepted definition is the foremost research opportunity as the status of learning disabilities is assessed at the present time.

A second problem, closely related to the first, is that pragmatic approaches to research on interventions for the learning disabled are hampered by the high incidence figures resulting from non-operational definitions. Using the classification of learning disabilities for underachievers in general, or even for those learners who are not achieving in a single academic subject, has rendered research on methodology virtually useless. Who are the learners for whom a specifice method or material or service delivery system may be said to be effective? The failure of generalizability of many research findings can be directly traced to problems of definition and prevalence. The state of the art which confronts the researcher who would address relevant issues in the field of learning disabilities might be summarized in the words of Wallace (1976): "There is little chance that problems associated with who should teach, and what should be taught, will ever be settled if there is no agreement on <u>who</u> should be taught" (p. 60).

Any discussion of research directions to be taken by an institute devoted to investigations of learning disabilities, then, must begin with an overview of relevant research opportunities in identification. Although a review of the literature can yield dozens of unanswered questions (Mercer, Forgnone, and Wolking, 1976), the relevant questions for The University of Kansas Institute for Research in Learning Disabilities are those which relate to identification issues surrounding the adolescent. Examination of 88 definitions (Fass, 1976), which have evolved since the term was coined in 1962, failed to yield references to age factors in defining learning disabilities, yet an analysis of the literature reveals a growing awareness that "the emphasis on both early identification and secondary programming might establish chronological age as crucial to a functional definition of L.D." (Mercer et al., 1976). The implication here that a single definition may not apply to both elementary and secondary students is a challenging one. Investigations of characteristics associated with young learning disabled children have not established that adolescents share the same attributes. In contrast, there is considerable anecdotal evidence to suggest that learning disabilities are qualitatively different as manifested by the adolescent (Hagin, 1971; Siegel, 1974). The question of how a disability may vary as a function of age is critical.

Equally critical to the field is the question of whether the secondary learning disabled population can be identified by presently available instruments. Alternatives to the strict criteria of cut-off points on psychometric measures have been investigated by Deshler and Alley (1977), who found that Bayesian procedures using probability weightings for five component disabilities could distinguish secondary learning disabled students. Deshler and Alley have also designed a checklist for use by regular classroom teachers based on the same probability ratios. Projected studies using these techniques offer promise of providing identification procedures feasible in public schools.

Although there have been a variety of changes in emphasis regarding characteristics considered to be central to the concept of specific learning disability, extant definitions remain centered upon attributes of the learner alone and, thus, focus upon intrinsic behavioral or cognitive causes of disability (Mercer et al, 1976). A promising area of research within the field is suggested by this commonality among definitions and by recent studies involving a clinical teaching or interaction assessment of the learner's status (Lerner, 1976). Haring (1974) is among those who have acknowledged the need for assessing interactions among conditions surrounding the learner and the interface between learner variables and the task that is being undertaken.

Intervention studies with adolescents offer unlimited research opportunities. There are few materials or curriculum guides for adolescents (Wiederholt and McNutt, 1977) and available reports of response to instruction are anecdotal (Siegel, 1974). Although they are not described in the literature as mutually exclusive, three

distinguishable orientations have emerged for approaching the teaching of basic academic skills to the secondary learning disabled student. What might be called the traditional orientation is that of a basic remediation approach to building academic skills (Goodman & Mann, 1976). The assumption underlying this approach is that materials for content-area instruction should be modified to match the learner's reading or mathematics skills level, so that skills mastery, rather than intellectual functioning level, dictates the level of content materials. A second orientation is to specify and teach those competencies which are functional in terms of economics and educational success and to teach them directly to the learning disabled adolescent as tools for school and post-school adjustment (Wiederholt, 1976).

The third option is a learning strategies model (Alley & Deshler, 1979) that advocates teaching information storage and retrieval procedures which cut across content areas to provide means for learning any academic subject matter. Included in this approach are strategies which have been tested empirically and proven successful, such as verbal mediation (Whimbey, 1976), clustering (Winne, Hauck, & Moore, 1975), visual imagery (Lesgold, McCormick, & Golinkoff, 1975), and scanning (Egeland, 1974). Other types of problem solving methods subsumed under the learning strategies approach are yet to be tested with learning disabled students. This approach has the advantage of being consistent with the average or above average intellectual functioning of the learning disabled student.

Investigations of the learning strategies approach include studies of problem solving in arithmetic (Lee, 1977) and reading (Warner, 1977) in addition to a study of monitoring skills across content areas (Deshler, Ferrell, & Kass, 1978). The focus of such studies is upon the mainstreamed adolescent since all secondary learning disabilities programs surveyed by Deshler, Lowrey, & Alley (1979) involved some type of integration and the use of adopted texts.

Because problems in the area of reading have tended to constitute the major academic skills problem of learning disabled students (Abrams, 1976; Lerner, 1976) and because reading disability is highly correlated with dropping out of school (Artley, 1968) and court contact (Murray, 1977), the question of reading status of the LD adolescent is crucial. Attempts to define literacy in terms of a specific instructional reading level have proved futile because of the number of variables involved, yet attempts have been made to establish types of reading competency for secondary students (Alley & Deshler, 1979) on the basis of reading levels below grade three or between grades three and six. Since reading comprehension is the crux of a secondary academic program (Strang, 1967), interventions in this area should be undertaken. A related question of current research interest is the role of language learning as related to reading and writing skills (Wiig & Semel, 1975; Moran & Byrne, 1977).

The relationship of reading problems and other specific disabilities to dropping out of school and contact with the courts is currently a topic of research interest (Murray, 1977). The number of

juvenile delinquents who are also learning disabled has been reported as 25 percent of the adjudicated population (Congressional Record, March 7, 1977). Because an estimated 700,000 young people each year leave secondary schools before they graduate (Anderson, 1970), interventions which take place outside the school settings are also relevant to learning disabled adolescents.

Teaching family models such as Achievement Place (Kirigin, Phillips, Timbers, Fixsen, & Wolf, 1977) for pre-delinquents or those in contact with the courts have been influential in the literature on home-style rehabilitation and group treatment. A series of related approaches to improving conduct and academic performance through interventions carried out in the home have been reported by Schumaker, Hovell, and Sherman (1977). Such intervention strategies address themselves to the realities of the total life setting for the learning disabled adolescent (Braukmann, Kirigin, & Wolf, 1976). The sociological perspective toward learning disabilities advocated by Kronick (1976) offers a number of opportunities for investigations of interactions between the learning disabled adolescent and the many communication and learning settings in which he is expected to function (Siegel, 1974).

An emerging concern, for those whose focus for the learning disabled adolescent is post-high school functioning, is career education. As it is defined in the literature associated with learning disabilities, career education is seen as much broader than vocational preparation for a specific job. Recent literature has moved away from the concept of narrow vocational training for learning disabled youth, but there are many unanswered questions about the range of occupational options which can realistically be offered to them as well as the roles of "type" and "severity" of disability, progress in academics, and parental expectations (Kronick, 1976).

In addition to the many factors which must be taken into account within the field of learning disabilities, systematic research efforts must take into consideration the many school and societal influences that affect learning disabled youth. The nine issues proposed by the National Society for the Study of Education as crucial to secondary schools must be taken into account (Van Til, 1976). Other concerns emerge from a review of the literature on secondary schools. The proliferation of action schools and alternative schools (Haworth, 1976) will have an effect on secondary education. Competency testing for exit from high school is a trend which undoubtedly will affect the learning disabled adolescent. Changes in the juvenile justice system also have implications for learning disabled youth.

Research on the learning disabled adolescent takes place, then, not only within the current issues in this area of special education, but also within the larger framework of trends in secondary education and in society. To assure attention to the complexity of educational and societal trends impacting the LD adolescent, a research model has been designed to illustrate the process followed by the University of Kansas Institute for Research in Learning Disabilities to assure relationships among research activities.

Process Research Model

Two requirements are central to the purposes of the Institute. These are: (a) the commitment to programmatic research designs leading to validation of interventions and (b) the generative function of identifying new research questions and adding to the existing body of knowledge on learning disabled individuals. Figure 1 represents the process model to be employed.

Philosophy

In recent years, spurred by a heightened national concern for equity, there has emerged a recognition that the handicapped deserve (and legally must be afforded) rights and opportunities equivalent to those enjoyed by all other American citizens. Previous federal legislation, progress made at the state level and in the courts, as well as the comprehensive nature of PL 94-142 have developed a solid foundation upon which improvements in educational opportunities for the handicapped can be built.

The learning disabled adolescent stands to benefit from these advancements as much as other handicapped individuals. However, there is a significant set of problems confronting the adolescent with learning disabilities that may make the goal of independent functioning within the regular classroom and adjustment to the world of work particularly difficult to achieve. Among the problems to be considered in meeting the needs of the LD adolescent relative to identification and intervention concerns are the following:

1. Learning disability in adolescent populations is more than just a school related problem. Many adolescents with learning disabilities are found in nonschool environments and, thus, identification and intervention efforts must be comprehensive to address the entire scope of the presenting problem.

2. The major emphasis of resources and research with LD populations has tended to focus at the young ages; consequently, there is a limited set of knowledge relative to identifying characteristics, identification procedures and intervention methodologies to draw upon concerning the LD adolescent.

3. The problems manifested by the LD adolescent include not only the typical cognitive factors but also those factors along personal and social dimensions.

4. The American culture is becoming increasingly complex and every changing. Technology, mobility, and demands for increased competence (often measured by state-sanctioned competency exams for basic skills) add additional requirements for successful adjustment by the LD adolescent.

The success with which these problems are addressed will depend upon a clear delineation of learner attributes and development of successful intervention strategies. A significant factor in addressing the needs of the LD adolescent can be educational research and development. While research and development will not be the sole determinant of progress on behalf of the LD adolescent, it can make a substantial contribution through an insistence upon rigor in the formulation of problems and explanations as well as in the systematic collection of empirical evidence.

The primary mission of this Institute is to conduct research designed to produce practical, effective, and cost-efficient identification procedures and interventions for LD adolescents. A key function of the Institute is to coordinate research projects and resources. The Process Research Model (see Figure 1) is applied to insure that research is conducted in a systematic fashion. This model, adapted from Blackhurst (1977), is designed to promote a continual interface among all research activities within the Institute as well as to insure that key areas of research receive approximately equal attention and that they are conducted in concert with other research in the Institute. The eight major components of the Process Model are described below.

Components

Research Monitoring and Communication. As research progresses at each point of the process model, joint planning of research by relevant members of the research staff is necessary. Such planning requires intensive communication of information to researchers working at every point in the research model. In some cases the same persons are working at various points in the model. However, this is not always the case so maintaining processes for planning and information exchange is a critical aspect of the overall research process. Additional monitoring and communication functions involve apportionment of support to functions at various points in the model and mediation of conflicts among persons who may be working at different points in the model.

Population Identification. A major issue confronting professionals in the field of learning disabilities centers on isolating the learner characteristics which differentiate adolescents with learning disabilities from their non-handicapped peers. The problem is complicated by the lack of agreement on which learner characteristics or constellation of characteristics constitute a diagram of learning disabilities and the degree of severity or deficit associated with learning disabilities. Resolution of this problem is a necessary condition for future progress in remediation and/or prescription.

Since Kirk (1962) suggested the term learning disabilities (LD) there has been an onslaught of definitions, characteristics, and measures to identify LD persons. Confusion and division among professionals and parents has resulted. The federal government

recognized this problem and directed USOE-BEH to: (a) provide a definition of LD, (b) list characteristics of LD persons, and (c) identify procedures to identify LD individuals. Regulations to meet this legislative mandate were distributed on November 29, 1977 and subsequent public hearings have suggested that the issue is still not resolved. The Institute staff is investigating the degree and extent to which the eight characteristics provided by USOE-BEH are associated within the LD adolescent population. Other cognitive, affective, and psychomotor variables that have been associated with LD but are excluded in the USOE-BEH listing are also being investigated. The LD identification formula provided by USOE-BEH has come under attack by professionals. Several members of the Institute are considering the USOE-BEH procedure as well as several others to determine their relative merits. These identification studies are being undertaken in a vareity of both in-school and out-of-school settings.

Specification and Classification of Objectives. Public Law 91-230 suggests in general terms the intervention objectives for learning disabled individuals. The suggested objectives involve improved ability to listen, think, speak, read, write, spell and do mathematical calculations. However, for specific interventions a further delineation of objectives is required. These objectives must be tailored to fit the student population and the particular setting in which the intervention is to be conducted. Four basic procedures are being used to specify and develop important objectives for intervention. The first procedure involves a careful review of literature concerning the critical problems of adolescents with learning disabilities. The second procedure involves interviewing learning disabled adolescents and the significant persons in their lives (teachers, parents, peers, work supervisors, etc.) to determine what they consider to be the important problems. The third procedure is direct observation of adolescents with learning disabilities as they perform in critical natural situations such as the classroom, home, work, and recreational activities. When available, standardized tests are also used to isolate critical deficits.

The first two procedures are used to identify gross objectives for populations of adolescents with developmental disabilities. Direct observation and testing are procedures which further refine the objectives for individual adolescents in specific intervention settings. These measures also serve as a validity check on the objectives as derived from interviews with significant persons. When a number of possible objectives for intervention have been identified these objectives are given priority weightings according to (a) their congruence with the official objectives implied by PL 91-230, (b) their importance to the persons directly involved, and (c) the severity of the deficit as indicated by observations and testing.

After the objectives have been selected and given priority weights the research staff will identify, select, and develop measures to evaluate the effectiveness of interventions in achieving behavior objectives. No doubt, some of the measures will be the same measures, or modifications of measures, which were used in selecting the

objectives. However, other measures will need to be obtained that are more directly related to the specific intervention being used. In some cases no appropriate procedures for evaluation exist. When this is true, evaluation procedures will be developed by measurement and intervention specialists on the research staff.

Selection or Development of Interventions. Interventions studied within the context of the Institute necessarily began with decisions concerning the content of the interventions. Such decisions were based on prior research and clinical experience as well as on well-specified objectives.

The examination of intervention options has taken into account the findings reported in the literature concerning learning disabilities and intervention attempts. In addition to surveying relevant journal articles and books, those researchers selecting or developing intervention strategies have reviewed the products and activities of pertinent federal and state agency funded research and demonstration projects as well as university departments of special education.

Options are also directly examined via research within the Institute context. Some research is designed to study and compare intervention processes and components. For example, several intervention processes are compared on a variety of dimensions in order to facilitate decisions on which processes should be incorporated into larger intervention strategies. Other research is designed to compare existing overall strategies to determine which, if any, produce significant effects. The effective strategies are then further examined to determine important component processes. Information thus gathered on individual and groupings of processes is useful in designing and implementing intervention strategies.

The designers of interventions also make decisions concerning what curriculum methods and materials to employ or adapt and in what setting(s) the intervention should be implemented. As stated above, these decisions are made taking into account: (a) surveys of existing literature and intervention efforts, (b) the results of comparative Institute research, and (c) the objectives identified for the specific individuals to be treated. In addition, several specific criteria are employed in the selection or development process. One selection criterion is the probable generality of the proposed intervention (and research), i.e., its judged relationship to theory, principles, and broader applications. A second criterion is its probable effectiveness in changing behavior. Other important criteria include the probable cost-efficiency of the intervention, the practicality of the intervention (i.e., could it be readily used in school or existing relevant social settings), and the extent to which the intervention is likely to satisfy the various consumers of the intervention including the student, his or her parents, and the teacher(s) involved. Any intervention that does not produce consumer satisfaction is likely to be of limited utility.

The application of important effectiveness and practicality criteria is facilitated by literature and agency surveys and by well-designed background research. This approach should result in the choice of appropriate interventions for further study, refinement, and dissemination.

Implement Selected Interventions. Once the objectives have been selected, the interventions prepared, and the setting selected, the interventions are implemented. Despite all the careful planning and advanced preparation with personnel in the intervention setting, major tasks still remain. These tasks involve communicating the exact nature of the intervention to be implemented and obtaining permission from agencies, parents, and students for implementing the intervention procedures. Once these entry tasks are accomplished, the intervention agents (students, parents, teachers) must be trained. This training may be extensive, including presenting formal written and oral materials, modeling a procedure, role playing, and monitoring the intervention agent as he or she executes the intervention. When intervention agents have been trained, monitoring throughout the intervention is maintained to determine if the procedures are carried out and to provide feedback to the researcher so that ineffective or adversive procedures may be modified.

Evaluate Intervention. The Institute staff includes investigators who have chosen a variety of research designs to study issues associated with LD. Some investigators are using several group designs (Campbell & Stanley, 1973) to investigate specific research questions. Others are applying single-subject designs (Baer, Wolf, & Risley, 1968) in their studies. A third group has chosen a probablistic model (Bayesian) to design their investigations.

Cost effectiveness is built into the research designs described above. However, evaluation approaches specific to cost effectiveness are also included. One method popular among school administrators is PPBS. However, others exist including systems analysis, cost-benefit analysis, performance contracting and the discrepancy model, to name several better-known approaches.

It is also important to obtain consumer satisfaction with any intervention. It is an assumed variable in most evaluations. Such information should be included. It can be obtained by interview, as the Delphi Technique (Cyphert & Gant, 1973) or by using the goal-free evaluation method (Scriven, 1973).

Refine and Revise Interventions. The collection and analysis of evaluation data on implemented interventions indicates the quality of those interventions and allows functional decisions concerning whether the interventions should be continued, and if so, in what way they should be refined or revised. The importance of shaping programs and procedures on the basis of detailed feedback on prior efforts has been emphasized in the applied research and dissemination literature in such diverse fields as education, agriculture, and medicine (Havelock, 1969). Sensitive evaluation systems should provide data

on the basis of which revisions and refinements of interventions can be carried out and in addition should permit feedback on the degree to which the revisions and refinements improved the interventions (e.g., in regard to effectiveness, cost-efficiency, and consumer satisfaction).

Dissemination. A major role in the Institute is the dissemination of methods and materials that are effective in teaching adolescents with learning disabilities. Persons working in the dissemination not only have an obligation to disseminate but also to consult with and advise researchers at other points in the process model concerning the nature of materials and methods which are readily disseminated. If such advice is to be useful it must be based on sound evaluation of the dissemination process itself. Every attempt will be made in dissemination to describe not only the uses but also the limitations or constraints on the use of products and methods.

CONTENT MODEL

The ultimate goal of the Institute research staff is to develop products to be used in a wide range of school and nonschool settings to alleviate the problem of adolescents with learning disabilities. A wide range of interrelated research activities contribute to the achievement of this goal. The content of these research activities generally involves three functions: (a) defining and describing the characteristics and epidemiological factors related to learning disabilities, (b) developing and implementing sound intervention procedures, and (c) replicating and evaluating the generality of interventions across different populations, settings, and content. In view of the rather natural breakdown of functions, three critical research areas have been designated as shown in Figure 2. Researchers engage in a high degree of collaborative work and in many cases, a researcher functions across designated areas. Nevertheless, a breakdown into these areas is meaningful and allows assignment of responsibilities so that the overall mission of the Institute may be accomplished.

Programmatic Research Areas

Epidemiological Studies. Institute investigation concerns five areas of epidemiological studies. These areas address the issues of characteristics and identification procedures, the effect of learning disabilities on the performance of adolescents, factors that influence the degree of disability, and learner characteristics in relation to specific interventions. Emphasis is given to:

1. Evaluating the existing method for defining and identifying learning disabled adolescents. The present definition of LD is overly general and serves social, economic, and political purposes. For a definition of a specific population to be useful to research teams, the definition must provide both objective and specific criteria. A group of Institute investigators is testing the current definition for its utility as a research definition.

2. Developing a probability method for defining and identifying characteristics of the learning disabled adolescent. Investigative work has already begun to develop an objective component disability method (Alley, Deshler, & Warner, 1977; Deshler & Alley, 1977). The investigators are continuing to develop the component disability method to define and identify learning disabled adolescents for research and service purposes.

3. Determining student characteristics related to the adolescent with learning disabilities. Issues associated with the effect of learning disabilities on the adolescent are being studied. It has been reported, for example, that dropping out of school and juvenile delinquency are closely related to the incidence of learning disabilities. However, data to provide definitive support to this theory have not been provided. The goal of some investigators is to provide data-based evidence which objectively describes these relationships.

4. Determining contextual factors that contribute to the degree of disability experienced by the learning disabled adolescent. The type and degree of handicapping condition varies for learning disabled adolescents, particularly in terms of context. Some contexts accentuate disabilities, while others serve to conceal or minimize them. Attention is being given to the study of learning disabled adolescents in various contexts to determine which factors accentuate and minimize disabilities.

5. Conducting clinical studies of the learning characteristics of the adolescent population classified as learning disabled. Simply to define and characterize learning disabilities is not sufficient to understand the complex interaction between learning disabilities and the acquisition, organization, and retrieval of information. Some investigators will direct

efforts toward a better understanding of the learning disabled adolescent in various learning environments. Study results will provide intervention agents with knowledge of specific learning characteristics which form a basis for selection or design of appropriate interventions.

Intervention Studies. The Institute is directing a major portion of its resources and efforts to research designed to produce a system of interventions which will reduce the effects of learning disabilities in adolescent populations. A major objective of research in this area is to identify intervention strategies that are administratively feasible in school systems and nonschool settings.

Intervention studies are being conducted along four dimensions. First, a set of studies has been designed to determine the effectiveness of different intervention methods, modes, and formats. These investigations study the vast array of possibilities currently available for providing interventions for the LD adolescent. The efficacy of both traditional approaches and new combinations of methods, modes and formats is being studied. Second, studies to determine the learner specific objectives for purposes of interventions (e.g., curriculum content, learning strategies) are being implemented. This research is designed to investigate the nature and scope of curriculum appropriate for the LD adolescent. Third, factors for determining effective agents or combination(s) of agents are being studied. As the learning disabled individual enters adolescence, the type and relative influence of significant others in his/her life becomes an important consideration in the intervention process. The interface between teachers, parents, peers, supervisors, self, and the intervention system is being studied. Finally, a set of studies is being designed to determine the effectiveness of ameliorative arrangements or settings. The setting or arrangement itself can be the intervention independent of methods, formats, modes, curriculum or agent, or it can be a secondary factor in determining the general intervention climate. The ameliorative influence of these varied conditions is being researched.

Generality of Intervention Studies

The aim of Programmatic Research Area II is to produce interventions which are effective in eliminating problems of adolescents with learning disabilities. The aim of Programmatic Area III is to determine the generality of the effects of interventions which have proven successful in intervention studies. In an institute designed to produce methods and materials which can be widely used in public schools or homes, such research is extremely important. Research efforts in the field of intervention have frequently led to methods and materials which have produced dramatic results; but these methods and materials were often practical and effective only with a very limited range of students under highly unique and often unspecified conditions. The staff of the Institute is attempting to determine the limitations of generality of intervention procedures in three ways. First, interventions are carefully controlled and described. Second, the type of students who were the subjects of the intervention

are clearly designated. Third, such setting factors as physical arrangements, financial resources, and attitudes of personnel are carefully evaluated. Once these conditions are met, meaningful replications can be introduced to determine the generality, and limitations in the generality, of interventions. The replication studies evaluate three aspects of the generality of interventions. They are:

1. Generality of intervention procedures across levels of severity and constellations of disabilities

2. Generality of intervention procedures across settings or conditions within settings

3. Generality of intervention procedures across content areas

Establishment of Programmatic Research Data Banks

An important function of the Institute is to develop data banks in each programmatic research area, i.e., epidemiological studies, intervention studies, and the generality of intervention studies. The data bank constitutes the cumulative result of systematically conducting interrelated research in program areas. The intent is to identify variables generic across research projects within each programmatic research area. Particular attention is given to collecting, storing, and analyzing data on variables that have properties calling for a longitudinal approach. In other words, the value of the data increases in significance as it is added to over time. The data banks are not intended to standardize research designs or to restrict the scope of research conducted. Computerized data banks increase the probability and accessibility of the data and provide the capability for efficient and fast statistical analyses. Furthermore, once data banks are computerized, then "integrated" data banks can be generated from the results of longitudinal analysis across banks. The goal is to identify the kinds of data which warrant inclusion in a data bank. This element of the Institute approach to research represents a major resource for other institutes in learning disabilities. The data banks are being designed and described so as to maximize accessibility by other institues. Each research proposal is examined to determine those aspects of the proposed study which can be structured to collect data for the banks. The following discussion on programmatic research areas introduces the data bank concept as a secondary emphasis of each area.

Epidemiological Studies

Secondary Emphasis on Data Banks. Integral to research activities designed to identify and substantiate learner characteristics which differentiate learning disabled youth from nonhandicapped peers is an examination of those conditions which contribute to the level or evidence of learning disabilities. Except for those studies that are clinical in nature, studies focusing on identification are conducted in naturalistic settings. Attention is given to examining those

conditions which influence the performance of the LD youth. An attempt is made to develop a data base from which inferences can be drawn regarding implications for the design of interventions. The intent of most interventions is to remediate learner information or to enhance the development of learning disabled adolescents. Thus, in the process of conducting research related to learner characteristics, data on the context in which LD youth are found adds to the efficiency of the Institute.

A similar approach has been followed in establishing a data base on learner characteristics. Attention has been given to retrieving data across studies focusing on procedures for the identification of learning disabled adolescents and studies concerned with differentiating learner characteristics.

Intervention Studies

Secondary Emphasis on Data Banks. A major feature of most educational intervention involves the intensity of instruction. This feature is also frequently ignored in research on interventions in favor of assessing the effects of intervention designs on the performance of subjects in knowledge or skill acquisition. Intensity refers to an array of variables which collectively center on the learner's response to concentrated instruction. Included are variables such as time engaged in special instruction, level of learner response required, attention rate, tolerance for stress, and consequences of response. A related variable pertains to the degree of correspondence between the objective of the content taught through the intervention and the learner's needs. The assumption is that the closer the relationship, the more intense the instruction.

Procedures have been designed to collect data systematically on the effectivenss of selected design features relative to performance of learning disabled adolescents and intensity of instruction in terms of intervention. This data base approach has not unduly influenced study design in this program area. The procedure for collecting data generalizes across studies and is not the focus of particular studies.

Generalization of Intervention Studies

Secondary Emphasis on Data Banks. An analysis of educational interventions reveals that there are a number of intervention modes, formats, or models which are generic. They become unique when applied to particular populations or when used to teach curriculum content and skills. While the primary benefit to be derived from researching interventions centers on the impact of an intervention for changing learner behavior in prescribed ways, it is also important to examine the power of those generic intervention modes. For example, it may be that learning disabled adolescents do not respond to peer teaching or tutorial intervention modes as effectively as they do to interventions embedded in the format of instructional materials designed for independent use. As intervention studies are conducted, a data base is being compiled regarding the generic modes or intervention formats.

The emphasis is on collecting data pertaining to the structural features, i.e., modes of intervention, rather than the content taught through interventions.

Computer Implementation of Data Banks

The primary objectives for computerizing the data banks mentioned in previous paragraphs can be summarized as follows:

1. To provide a data base design whereby users who perceive the same data differently can employ them in different ways

2. To protect the intellectual investment of the Institute by not having to redesign programs and logicial data structures when changes are made in the data base

3. To minimize the cost of storing, analyzing, and updating data

4. To provide fast and efficient access to data

5. To allow users to gain access to data in a simple fashion by hiding the complexity of data banks with the data base management

6. To make available a reference system whereby it would be clear to users what data were available to them

7. To increase the flexibility of data usage by providing access to the data base through different access paths

8. To increase the efficiency of satisfying unanticipated requests for data, without having to write application programs, by means of a high level query language

9. To provide a system whereby data are quickly made available to users

SUMMARY

An examination of the complexity of the environment in which the LD adolescent is expected to function at home, at school, and in the community as well as an awareness of the issues surrounding the identification of learning disabilities necessitated the development of a research model that assured relationships among all research activities. The research model is based on a commitment to programmatic research designs with an epidemiological foundation. Information derived from these initial studies is used to identify new research questions leading to the validation of interventions. Thus, all research serves to generate new activity and to expand the field of knowledge regarding learning disabled individuals, especially the field of knowledge related to learning disabled adolescents and young adults.

REFERENCES

Abrams, J. C. More on interdisciplinary cooperation. Journal of Learning Disabilities, 1976, 9, 603-604.

Alley, G. R. & Deshler, D. D. Teaching the learning disabled adolescent: Strategies and methods. Denver: Love Publishing Co., 1979.

Alley, G. R., Deshler, D. D., & Warner, M. A Bayesian approach to the use of teacher judgment of learning characteristics for the identification of students with learning disabilities. Presentation at 55th Annual Convention, The Council for Exceptional Children, Atlanta, April, 1977.

Anderson, L. E. (Ed.). Helping the adolescent with the hidden handicap. Belmont, CA: Fearon/Lear Siegler, 1970.

Artley, A. S. Trends and practices in secondary reading. Newark, DE: International Reading Association, 1968.

Baer, D. M., Wolf, M. M., & Risley, T. R. Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis, 1968, 1, 91-97.

Bell, G. R. Of dropouts and pushouts. National Association of Secondary School Principals Bulletin, 1976, 60, 65-70.

Blackhurst, A. E. Competency-based special education personnel preparation. In R. D. Kneedler & S. J. Tarver (Eds.), Changing perspectives in special education. Columbus: Merrill, 1977.

Braukmann, C. J., Kirigin, K. A., & Wolf, M. M. Achievement Place: The researcher's perspective. Paper read at American Psychological Association Annual Convention, 1976.

Campbell, D. T., & Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally Co., 1963.

Congressional Record, Vol. 123, No. 39. Washington, D.C.: U.S. Government Printing Office, March 7, 1977.

Cruickshank, W. M. Myths and realities in learning disabilities. Journal of Learning Disabilities, 1977, 10, 58-65.

Cyphert, R. R. & Gant, W. L. The Delphi technique. In F.R. House (Ed.), School evaluation: The politics and process. Berkeley, CA: McCutchan Publishing Corp., 1973.

Deshler, D. D., & Alley, G. R. A Bayesian approach to the use of psychometric test data for the identification of students with learning disabilities at the secondary level. Presentation at 55th Annual Convention, The Council for Exceptional Children, Atlanta, April, 1977.

Deshler, D. D., Ferrell, W. R., & Kass, C. E. Error monitoring of schoolwork by learning disabled adolescents. Journal of Learning Disabilities, 1978, 11, 401-414.

Deshler, D. D., Lowrey, N., & Alley, G. R. Programming alternatives for LD adolescents. Academic Therapy, 1979, 14, 389-397.

Egeland, B. Training impulsive children in the use of more efficient scanning techniques. Child Development, 1974, 45, 165-171.

Faas, L. A. Learning disabilities: A competency based approach. Boston: Houghton-Mifflin, Co., 1976.

Goodman, L., & Mann, L. Learning disabilities in the secondary school: Issues and practices. New York: Grune & Stratton, 1976.

Hagin, R. How do we find him? In E. Schloss (Ed.), The educator's enigma: The adolescent with learning disabilities. San Rafael, CA: Academic Therapy, 1971.

Haring, N. G. Systematic instructional procedures. In S. S. Brainerd (Ed.), Learning disabilities: Issues and recommendations for research. Washington, D. C.: U.S. Department of Health, Education and Welfare, 1974.

Havelock, R. G. Planning for innovation through dissemination and utilization of knowledge. Ann Arbor, MI: Institute for Social Research, 1969.

Haworth, W. E. Are alternative high schools different? National Association of Secondary School Principals Bulletin, 1976, 60, 95-98.

Kirigin, K. A., Phillips, E. L., Timbers, G. D., Fixsen, D. L., & Wolf, M. M. Achievement Place: The modification of academic behavior problems of delinquent youths in group-home settings. In B.C. Etzel, J. M. LeBlanc, & D. M. Baer (Eds.), New development in behavioral research: Theory, methods and application. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1977.

Kirk, S. A. Educating exceptional children. Boston: Houghton Mifflin Co., 1962.

Kronick, D. The importance of a sociological perspective toward learning disabilities. Journal of Learning Disabilities, 1976, 9, 115-119.

Lee, W. A comparison of verbal problem solving in arithmetic of learning disabled and non-learning disabled seventh grade males. Unpublished doctoral dissertation, University of Kansas, Lawrence, Kansas, 1977.

Lerner, J. W. Children with learning disabilities: Theories, diagnosis and teaching strategies. Boston: Houghton Mifflin, 1976.

Lesgold, A. M., McCormick, C. & Golinkoff, R. M. Imagery training and children's prose learning. Journal of Educational Psychology, 1975, 67, 663-667.

Mercer, C. D., Forgnone, C., & Wolking, W. D. Definitions of learning disabilities used in the United States. Journal of Learning Disabilities, 1976, 9, 376-386.

Moran, M. R., & Byrne, M. C. Mastery of verb tense markers by normal and learning disabled children. Journal of Speech and Hearing Research, 1977, 20, 529-542.

Murray, C. A. The link between learning disabilities and juvenile delinquency: Current theory and knowledge (executive summary). Washington, D. C: National Institute for Juvenile Justice and Delinquency Prevention (U.S. Department of Justice), 1977.

Schumaker, J., Hovell, M. F., Sherman, J. A. A manual for using daily report cards and home privileges in improving conduct and academic performance of problem students. Lawrence, KS.: H & H Enterprises, 1977.

Scriven, M. Goal-free evaluation. In E. R. House (Ed.), School evaluation: The politics and process. Berkeley, CA: McCutchan Publishing Corp., 1973.

Siegel, E. The exceptional child grows up. New York: E.P. Dutton & Co., Inc., 1974.

Strang, R. The improvement of reading. New York: McGraw Hill, 1967.

Van Til, W. Nine crucial issues. National Association of Secondary School Principals Bulletin, 1976, 60, 80-86.

Wallace, G. Interdisciplinary efforts in learning disabilities: Issues and recommendations. Journal of Learning Disabilities, 1976, 9, 520-526.

Warner, M. Teaching learning disabled junior high students to use mental imagery as a strategy for facilitating recall of reading passages. Unpublished doctoral dissertation, University of Kansas, Lawrence, KS, 1977.

Whimbey, A. You can learn to raise your IQ score. Psychology Today, 1976, 9(8), 27-29, 84-85.

Wiederholt, J. L. Programming for learning disabilities at the secondary level. Division for Children with Learning Disabilities Newsletter, 1976, 1, 40-41.

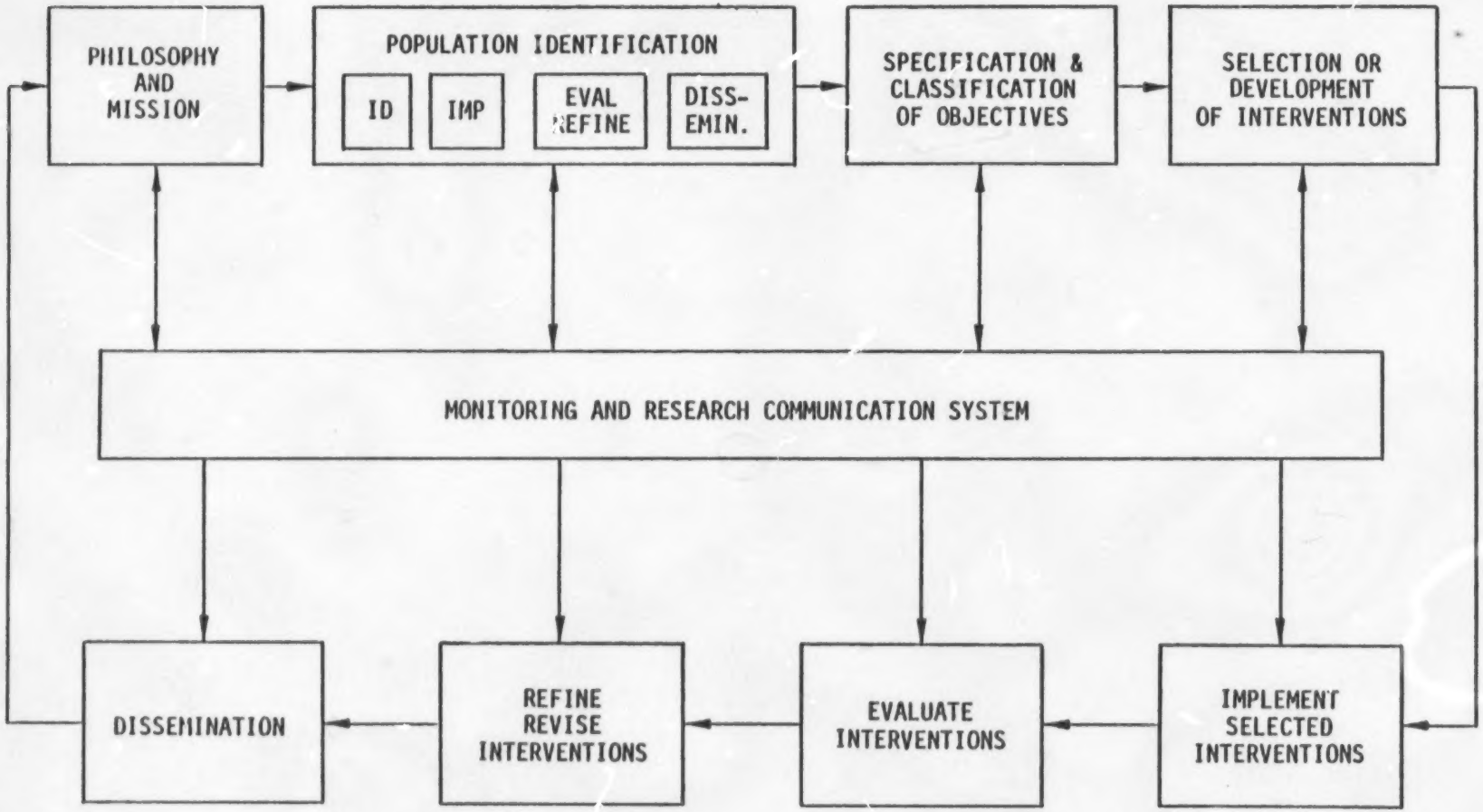
Wiederholt, J. L., & McNutt, G. Evaluating materials for handicapped adolescents. Journal of Learning Disabilities, 1977, 10, 132-140.

Wiig, E. H., & Semel, E. M. Language disabilities in children and adolescents. Boston: Charles Merrill, 1976.

Winne, P. H., Hauck, W. E., & Moore, W. The efficiency of implicit repetition and cognitive restructuring. Journal of Educational Psychology, 1975, 67, 770-775.

FIGURE I

PROCESS RESEARCH MODEL



CONTROL MODEL

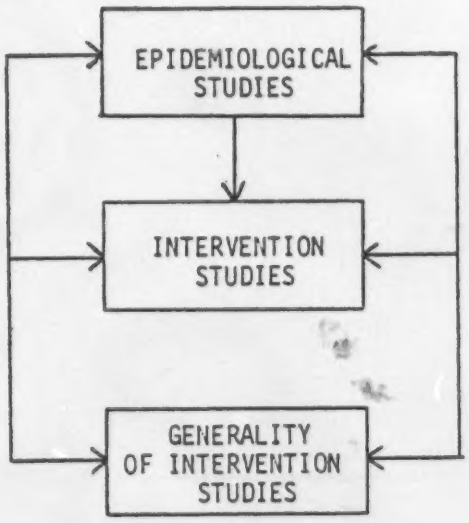


FIGURE 2